IS 8271-2-6 (1981): Quartz Crystal Units used in Oscillators, Part 2: Series AA, Section 6: Quartz Crystal Unit Type AA-06 [LITD 5: Semiconductor and Other Electronic Components and Devices]

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IS : 8271 (Part II/Sec 6) - 1981
[Superseding IS : 2916 (Part VII) - 1975]
UDC 621·373·5

(Reaffirmed 2001)

Indian Standard

SPECIFICATION FOR QUARTZ CRYSTAL UNITS USED IN OSCILLATORS

PART II SERIES AA

Section 6 Quartz Crystal Unit Type AA-06

0. General — This standard shall be read in conjunction with IS : 8271 (Part I)-1981 'Specification for quartz crystal units used for frequency control and selection: Part I General requirements and tests (*first revision*)'.

1. Outline and Dimensions — Holder outline shall conform to type AA (*See* sheet 1A of IS : 4570-1968 'Specification for crystal holders').

2. Marking — *See* 8 of IS : 8271 (Part I)-1981.

3. Construction and Workmanship — *See* 7 of IS : 8271 (Part I)-1981.

4. Test Schedule and Detail Requirements

4.1 *General Conditions for Test* — *See* **9.2** of IS : 8271 (Part I)-1981.

4.2 *Test Schedule* — The sequence and grouping of type, routine and acceptance tests shall be as per **9.1** of IS : 8271 (Part I)-1981.

4.3 *Detail Requirements* — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AA-06

Characteristic (1)	Requirement (2)	
a) Type of holder	AA (*See* 1)	
b) Frequency range	1 to 20 MHz	
c) Frequency tolerance:		
i) Room temperature	±75 ppm	
ii) Operating temperature range	±20 ppm	
d) Frequency stability	±5 ppm	
e) Resonance resistance	*See* Table 2	
f) Mode of oscillation	Fundamental	
g) Load capacitance	32±0·5 pF	
h) Capacitance shunt	7 pF, Maximum	
j) Reference temperature	75°±1°C	
k) Temperature range:		
i) Operating	75°±5°C	
ii) Operable	−55° to +70°C and +80° to +90°C	
m) Test set, calibration values and rated drive level	*See* Table 3	
n) Shock [as per **9.15** of IS : 8271 (Part I)-1981]	*1 to 2·0 MHz*	*Over 2·0 to 20 MHz*
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
p) Vibration [as per **9.16.1** (Severity A) of IS : 8271 (Part I)-1981]		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
q) Temperature cycling		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
r) Temperature run		
i) Frequency change permitted	±10 ppm	±5 ppm
ii) Resonance resistance change permitted	±15 percent	±10 percent
s) Ageing		
Frequency change permitted	5 ppm	—

Adopted 8 May 1981

Gr. 1

INDIAN STANDARDS INSTITUTION
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Piezoelectric Devices for Frequency Control and Selection Sectional Committee, LTDC 12

TABLE 2 RESONANCE RESISTANCE

[*Table* 1(e)]

Frequency Range	Maximum Resonance Resistance	Frequency Range	Maximum Resonance Resistance
MHz	ohms	MHz	ohms
(1)	(2)	(1)	(2)
From 0·9 to 1	580	Over 3·75 to 4	75
Over 1 to 1·12	540	Over 4 to 5	60
Over 1·12 to 1·25	490	Over 5 to 7	35
Over 1·25 to 1·37	450	Over 7 to 10	24
Over 1·37 to 1·5	410	Over 10 to 15	22
Over 1·5 to 1·62	380	Over 15 to 20	20
Over 1·62 to 1·75	330		
Over 1·75 to 1·87	300		
Over 1·87 to 2	290		
Over 2 to 2·12	270		
Over 2·12 to 2·25	250		
Over 2·25 to 2·6	200		
Over 2·6 to 3	150		
Over 3 to 3·4	110		
Over 3·4 to 3·75	90		

TABLE 3 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[*Table* 1(m)]

Sl No.	Frequency Range	Calibration Values			Rated Drive Level
		Resistance	Crystal Current	Resistor Voltage Drop	
	MHz	ohms	mA	V	mW
(1)	(2)	(3)	(4)	(5)	(6)
1.	From 0·8 to 1·5	100	10	—	10·0±2·0
2.	Over 1·5 to 2·25	50	15	—	
3.	Over 2·25 to 3·4	40	15	—	
4.	Over 3·4 to 5·1	25	20	—	
5.	Over 5·1 to 7·5	14	25	—	
6.	Over 7·5 to 10	11	30	—	
7.	Over 10 to 15	13	20	—	5·0±1·0
8.	Over 15 to 20	10	—	0·22	5·0±1·0

For Sl No. 1 to 7 — Test Set TS-330/TSM

For Sl No. 8 — Test Set TS-683/TSM

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